

**IN THE CLAIMS:**

1. (Currently Amended) A broadcasting apparatus that broadcasts a specific program to which a reproduction time period between a starting time and a finishing time is specified, the reproduction being performed by a receiving apparatus to display the specific program in the reproduction time period, the broadcasting apparatus comprising:

5 allotment unit ~~operable to allot~~ allocating a broadcasting bandwidth for the reproduction time period to the specific program and allotting a part of the broadcasting bandwidth for a preceding time period immediately before the reproduction time period to the specific program and the other part of the broadcasting bandwidth to another program, so that the part of the broadcasting bandwidth ~~for the preceding time period allotted to the specific program~~  
10 is narrower than the other part of the broadcasting bandwidth ~~allotted to another program~~, the preceding time period being longer than a time period that is necessary for transmitting a program data of the specific program at least once ~~more than once~~ during the part of the broadcasting bandwidth for the preceding time period allotted to the specific program;

script generation unit ~~operable to generate~~ generating (a) when the receiving  
15 apparatus receives an event message for instructing storage, a script of instruction for the receiving apparatus to store ~~for storing~~ program data of the specific program in a storage unit of the receiving apparatus, and (b) when the receiving apparatus receives an event message for instructing reproduction, a script of instruction for the receiving apparatus to perform the reproduction to display ~~reproduce~~ the program data of the specific program in a case where the  
20 program data of the specific program has been stored in the storage unit, each ~~script~~ of the scripts being automatically stored when the receiving apparatus receives the script;

an event message generation unit ~~operable to generate~~ generating the event message for instructing storage and the event message for instructing reproduction;

transmission unit ~~operable to transmit~~ transmitting a normal program that includes  
25 a video stream and an audio stream, and further in accordance with the result of allotment by the allotment unit, (a) repeatedly multiplex program data of the other program with the normal program based on a data carousel transmission method and transmit resultant ~~[[a]]~~ first multiplexed ~~result data~~ while multiplexing the program data of the specific program and the script with the normal program and transmitting a second multiplexed result in prior to the  
30 preceding time period, ~~[[and]]~~ (b) repeatedly multiplex ~~[[the]]~~ program data of the specific program, the program data of the other program, and the script with the normal program based on the data carousel transmission method and transmit ~~[[the]]~~ resultant second multiplexed data result in the reproduction preceding time period~~[[;]]~~, and (c) repeatedly multiplex the program data of the specific program and the script with the normal program based on the data carousel  
35 transmission method and transmit resultant third multiplexed data in the reproduction time period; and

control unit ~~operable to control~~ controlling the transmission unit to repeatedly transmit event message for instructing storage in the preceding time period and to transmit the event message for instructing reproduction at the starting time,

40 wherein the specific program has the program data that relates to a commercial message which is inserted in the normal program, and

the reproduction time period of the specific program is the same as a broadcast time period of the commercial message.

2.-3. (Cancelled)

4. (Previously Presented) The broadcasting apparatus of Claim 1, further comprising:

a storage unit ~~[[for]]~~ storing as the program data of the specific program (a) first contents data that makes up the specific program and (b) second contents data that is different  
5 from the first contents data in part,

wherein the transmission unit transmits the first contents data in the preceding time period and transmits the second contents data in the reproduction time period of the specific program.

5.-8. (Cancelled)

9. (Currently Amended) A broadcasting apparatus that transmits a data broadcasting program and a first and a second specific programs which are inserted in the data broadcasting program, a total time period between a starting time and a finishing time for broadcasting the data broadcasting program including a first time period during which the first specific program is  
5 broadcast and a second time period during which the second specific program is broadcast, reproduction being performed by a receiving apparatus to display the specific program in the respective time periods, the broadcasting apparatus comprising:

allotment unit ~~operable to~~

(a) ~~allot~~ allotting a part of the broadcasting bandwidth to the first and the  
10 second specific programs and the other part of the broadcasting bandwidth to the data broadcasting program for all of the time periods other than the first and the second time periods in the total time-period, so that the part of the broadcasting bandwidth allotted to the first and the second specific programs for all time periods other than the first and the second time periods is narrower than the other part of the broadcasting bandwidth allotted to the data broadcasting

15 program for all time periods other than the first and the second time periods, all of the time  
periods other than the first and the second time periods being longer than the time period  
necessary for transmitting a program data of the first specific program and a program data of the  
second specific program ~~more than~~ at least once during the part of the broadcasting bandwidth  
allotted to the first and the second specific programs for all time periods other than the first and  
20 the second time periods, and

(b) ~~allot~~ allotting a part of the broadcasting bandwidth to the first specific  
program and the other part of the broadcasting bandwidth to the second specific program for the  
first and the second time periods;

script instruction generation unit ~~operable to~~ (i) ~~generate~~ generating (a) when a  
25 receiving apparatus receives a first event message for instructing storage, a script ~~for storing of~~  
instruction for the receiving apparatus to store program data of the first specific program in a  
storage unit of the receiving apparatus and (b) when the receiving apparatus receives a second  
event message for instructing storage, a script ~~for storing of~~ instruction for the receiving  
apparatus to store the program data of the second specific program in ~~[[the]]~~ a storage unit of the  
30 receiving apparatus and (ii) ~~generate~~ generating (a) when receiving a first event message for  
instructing reproduction, a script instructing the receiving apparatus to reproduce the program  
data of the first specific program in a case that the program data of the first specific program has  
been stored in the storage unit and (b) when receiving a second event message for instructing  
reproduction, a script for the receiving apparatus to reproduce the program data of the second  
35 specific program in a case that the program data of the second specific program has been stored  
in the storage unit, each script being automatically stored when the receiving apparatus receives  
the script;

an event message generation unit ~~operable to generate~~ generating the plurality of  
event messages for instructing storage and the plurality of event messages for instructing  
40 reproduction;

transmission unit ~~operable to transmit~~ transmitting a normal program that includes  
a video stream and an audio stream, and

(a) repeatedly transmit the scripts during the total time period, and

(b) in accordance with the result of allotment by the allotment unit,

45 (i) repeatedly multiplex the program data of the data broadcasting  
program during all of time periods other than the first and the second time periods in the total  
time period, and

(ii) repeatedly multiplex the program data of each of the first and the  
second specific programs during the total time period; and

50 control unit ~~operable to control~~ controlling the transmission unit so as to transmit  
(a) the first event message for instructing storage before the first time period (b) the first event  
message for instructing reproduction at the starting time of the first time period (c) the second  
event message for instructing storage before the second time period, and (d) the second event  
message for instructing reproduction at the starting time of the second time period,

55 wherein in accordance with the result of allotment by the allotment unit,  
repeatedly multiplex program data of the first and second specific program with the normal  
program based on a data carousel transmission method and transmit a first multiplexed result  
while multiplexing the program data of the first and second specific programs and the script with  
the normal program and transmitting a second multiplexed result in the preceding time period,  
60 and repeatedly multiplex the program data of the specific first and second programs and the

script with the normal program and transmit the second multiplexed result in the reproduction time period,

the first specific program and the second specific program respectively have the program data that relates to a first commercial program and a second commercial program which  
65 are inserted in the normal program, and

the first time period and the second time period respectively are the same as broadcast time periods of the first commercial program and the second commercial program.

10. (Cancelled)

11. (Currently Amended) The broadcasting apparatus of Claim 9, further comprising:  
storage unit ~~operable to store~~ storing as the program data of the first specific program (a) first contents data that makes up the first specific program and (b) second contents data that is different from the first contents data in part,

5 wherein the transmission unit transmits the first contents data in a time period other than the first time period in the total time period, and transmits the second contents data in the first time period.

12. (Currently Amended) A broadcasting apparatus that transmits a data broadcasting program and a first and a second specific programs which are inserted in the data broadcasting program, the reproduction being performed by a receiving apparatus to display the specific programs in specific reproduction time periods, the broadcasting apparatus comprising:

5 allotment unit ~~operable to~~ allocating

(a) ~~allot~~ a broadcasting bandwidth for a first time period and a second time period to the first specific program and the second specific program, the first time period and the

second time period are included in a total time period between a starting time and a finishing time for broadcasting the data broadcasting program, and

10                   (b) ~~allot~~ (1) a broadcasting bandwidth to the data broadcasting data program in the total time period except for the first time period and the second time period (2) a part of the broadcasting bandwidth to the first specific program for a time period preceding to the first time period in the total time period, so that the part of the broadcasting bandwidth allotted to the first specific program for the time period preceding to the first time period is narrower than the  
15                   broadcasting bandwidth allotted to the data broadcasting program for the time period preceding to the first time period, the time period preceding to the first time period being longer than a time period that is necessary for transmitting a program data of the first specific program ~~more than at~~ least once during the part of the broadcasting bandwidth allotted to the first specific program for the time period preceding to the first time period, and (3) a part of the broadcasting bandwidth to  
20                   the second specific program for a time period preceding to the second time period in the total time period, so that the part of the broadcasting bandwidth allotted to the second specific program for the time period preceding to the second time period is narrower than the broadcasting bandwidth allotted to the data broadcasting program for the time period preceding to the second time period, the time period preceding to the second time period being longer than  
25                   a time period that is necessary for transmitting a program data of the second specific program ~~more than at least~~ at least once during the part of the broadcasting bandwidth allotted to the second specific program for the time period preceding to the second time period;

                  script instruction unit ~~operable to~~ (i) ~~generate~~ generating (a) when ~~[[a]]~~ the receiving apparatus receives a first event message for instructing storage, a script ~~for storing of~~  
30                   instruction for the receiving apparatus to store the program data of the first specific program in a storage unit of the receiving apparatus and (b) when the receiving apparatus receives a second

event message for instructing storage, a script ~~for storing~~ of instruction for the receiving apparatus to store the program data of the second specific program in the storage unit and (ii) ~~generate~~ generating (a) when receiving a first event message for instructing reproduction, a script  
35 instructing the receiving apparatus to reproduce the program data of the first specific program in a case that the program data of the specific program has been stored in the storage unit and (b) when receiving a second event message for instructing reproduction, a script instructing the receiving apparatus to reproduce the program data of the second specific program in a case that the program data of the second specific program has been stored in the storage unit, each script  
40 being automatically stored when the receiving apparatus receives the script;

an event message generation unit ~~operable to generate~~ generating a plurality of event messages for instructing storage and a plurality of event messages for instructing reproduction;

transmission unit ~~operable to transmit~~ transmitting a normal program that includes  
45 a video stream and an audio stream and

(a) repeatedly transmit during the total time period, and  
(b) in accordance with the result of allotment by the allotment unit,  
(i) transmit repeatedly the program data of the data broadcasting program during all of time periods other than the first and the second time periods in the total  
50 time period,

(ii) repeatedly multiplex the program data of the first specific program during the first time period and the time period preceding to the first time period, and

(iii) repeatedly multiplex the program data of the second specific program during the second time period and the time period preceding to the second time period;

55 and



control unit ~~operable to control~~ controlling the transmission unit so as to transmit

(i) a plurality of the first event messages for instructing storage before the first time period (ii) a plurality of the second event messages for instructing storage before the second time period (iii) the first event message for instructing reproduction at the starting time of the first time period,  
60 and (iv) the second event message for instructing reproduction at the starting time of the second time period,

wherein in accordance with the result of allotment by the allotment unit, repeatedly multiplex program data of the first and second specific program with the normal program based on a data carousel transmission method and transmit a first multiplexed ~~result~~  
65 data while multiplexing the program data of the first and second specific programs and the script with the normal program and transmitting a second multiplexed result in the preceding time period, and repeatedly multiplex the program data of the specific first and second programs and the script with the normal program and transmit the second multiplexed ~~result~~ data in the reproduction time period,

70 the first specific program and the second specific program respectively have the program data that relates to a first commercial program and a second commercial program which are inserted in the normal program, and

the first time period and the second time period respectively are the same as broadcast time periods of the first commercial program and the second commercial program.

75 13. (Cancelled)

14. (Currently Amended) The broadcasting apparatus of Claim 12, further comprising:

storage unit ~~operable to store~~ storing as the program data of the first specific program (a) first contents data that makes up the first specific program and (b) second contents data that is different from the first contents data in part,

wherein the transmission unit transmits the first contents data in a time period preceding to the first time period in the total time period, and transmits the second contents data in the first time period.

15. (Currently Amended) A broadcasting method for broadcasting a specific program to which a reproduction time period between a starting time and a finishing time is specified, the reproduction being performed by a receiving apparatus to display the specific program in the reproduction time period, the broadcasting method comprising the steps of:

an allotment step for allotting, with an allotment unit, a broadcasting bandwidth for the reproduction time period to the specific program and allotting a part of the broadcasting bandwidth for a preceding time period immediately before the reproduction time period to the specific program and the other part of the broadcasting bandwidth to another program, so that the part of the broadcasting bandwidth ~~for the preceding time period allotted to the specific program~~ is narrower than the other part of the broadcasting bandwidth ~~allotted to another program~~, the preceding time period being longer than a time period that is necessary for transmitting a program data of the specific program ~~more than~~ at least once during the part of the broadcasting bandwidth for the preceding time period allotted to the specific program;

a script generation step for generating, with a script generation unit, (a) when the receiving apparatus receives ~~[[a]]~~ an event message for instructing storage, a script ~~for storing of~~ instruction for the receiving apparatus to store program data of the specific program in a storage unit of the receiving apparatus, and (b) when the receiving apparatus receives an event message

for instructing reproduction, a script of instruction for the receiving apparatus to reproduce  
perform the reproduction to display the program data of the specific program in a case where the  
20 program data of the specific program has been stored in the storage unit, each script being  
automatically stored when the receiving apparatus receives the script;

an event message generation step for generating, with an event generation unit, a  
plurality of event messages for instructing storage and an event message for instructing  
reproduction;

25 a transmission step for transmitting, with a transmission unit, a normal program  
that includes a video stream and an audio stream, and further in accordance with the result of  
allotment in the allotment step, (a) repeatedly multiplex program data of the other program with  
the normal program based on a data carousel transmission method and transmit ~~[[a]] resultant~~  
first multiplexed result data while ~~multiplexing the program data of the specific program and the~~  
30 ~~script with the normal program and transmitting a second multiplexed result in prior to~~ the  
preceding time period, and (b) repeatedly multiplex ~~[[the]]~~ program data of the specific program,  
the program data of the other program and the script with the normal program based on the data  
carousel transmission method and transmit ~~[[the]] resultant~~ second multiplexed result data in the  
reproduction preceding time period; and (c) repeatedly multiplex the program data of the specific  
35 program and the script with the normal program based on the data carousel transmission method  
and transmit resultant third multiplexed data in the reproduction time period; and

a control step ~~operable~~ for controlling, with a control unit, ~~[[a]]~~ the transmission  
unit to transmit the plurality of event messages for instructing storage in the preceding time  
period and to transmit the event message for instructing reproduction at the starting time,

40 wherein the specific program has the program data that relates to a commercial  
message which is inserted in the normal program, and

the reproduction time period of the specific program is the same as a broadcast time period of the commercial message.

16. (Currently Amended) A broadcasting method for broadcasting a data broadcasting program and a first specific program and a second specific program which are inserted in the data broadcasting program, a total time period between a starting time and a finishing time for broadcasting the data broadcasting program including a first time period during which the first specific program is broadcast and a second time period during which the second specific program is broadcast, reproduction being performed by a receiving apparatus to display the specific program in the respective time periods, the broadcasting method comprising the steps of:

an allotment step for

(a) allotting, with an allocating unit, a part of the broadcasting bandwidth to the first and the second specific programs and the other part of the broadcasting bandwidth to the data broadcasting program for all of time periods other than the first and the second time periods in the total time period, so that the part of the broadcasting bandwidth allotted to the first and the second specific programs for all time periods other than the first and the second time periods is narrower than the other part of the broadcasting bandwidth allotted to the data broadcasting program for all time periods other than the first and the second time periods, all of the time periods other than the first and the second time periods being longer than the time period necessary for transmitting a program data of the first specific program and a program data of the second specific program ~~more than~~ at least once during the part of the broadcasting bandwidth allotted to the first and the second specific programs for all time periods other than the first and the second time periods, and

(b) allotting a part of the broadcasting bandwidth to the first specific program and the other part of the broadcasting bandwidth to the second specific program for the first and the second time periods;

25 a script instruction generation step for (i) generating, with a script generator, (a) when a receiving apparatus receives a first event message for instructing storage, a script for ~~storing~~ of instruction for the receiving apparatus to store program data of the first specific program in a storage unit of the receiving apparatus and (b) when receiving a second event message for instructing storage, a script ~~for storing~~ of instruction for the receiving apparatus to  
30 store program data of the second specific program in the storage unit, and (ii) generating (a) when receiving a first event message for instructing reproduction, a script for the receiving apparatus to reproduce the program data of the first specific program in a case that the program data of the specific program has been stored in the storage unit and (b) when receiving a second event message for instructing reproduction, a script for the receiving apparatus to reproduce the  
35 program data of the second specific program in a case that the program data of the second specific program has been stored in the storage unit, each script being automatically stored when the receiving apparatus receives the scripts;

an event message generation step for generating, with an event message generator, a plurality of event messages for instructing storage and a plurality of event messages  
40 for instruction reproduction; and

a transmission step for transmitting, with a transmission unit, a normal program that includes a video stream and an audio stream, and

(a) repeatedly transmitting the scripts during the total time period, transmitting the first event messages for instructing storage before the first time period (ii) the  
45 first event message for instruction reproduction at the starting time of the first time period (iii)

the second event messages for instructing storage before the second time period, and (iv) the second event message for instruction reproduction at the starting time of the second time period, and

(b) in accordance with the result of allotment by the allotment step,

50 (i) repeatedly multiplex the program data of the data broadcasting program during all of time periods other than the first and second time periods in the total time period, and with the normal program based on a data carousel transmission unit,

(ii) repeatedly multiplex the program data of each of the first and the second specific programs during the total time period with the normal program;

55 wherein, the first and the second specific programs have the program data that relates to first and second commercial messages, respectively, which are inserted in the normal program, and

the reproduction time period of the specific program is the same as a broadcast time period of the commercial message.

17. (Currently Amended) A broadcasting method for broadcasting a data broadcasting program and a first specific program and a second specific program which are inserted in the data broadcasting program, reproduction being performed by a receiving apparatus to display the specific program in the respective time period, the broadcasting method  
5 comprising the steps of:

an allotment step for (a) allotting, with an allocating unit, a broadcasting bandwidth for a first time period and a second time period to the first specific program and the second specific program, the first time period and the second time period are included in a total time period between a starting time and a finishing time for broadcasting the data broadcasting

10 program, and (b) allotting (1) a broadcasting bandwidth to the data broadcasting data program in  
the total time period except for the first time period and the second time period (2) a part of the  
broadcasting bandwidth to the first specific program for a time period preceding to the first time  
period in the total time period, so that the part of the broadcasting bandwidth allotted to the first  
specific program for the time period preceding to the first time period is narrower than the  
15 broadcasting bandwidth allotted to the data broadcasting program for the time period preceding  
to the first time period, the time period preceding to the first time period being longer than a time  
period that is necessary for transmitting a program data of the first specific program ~~more than~~ at  
least once during the part of the broadcasting bandwidth allotted to the first specific program for  
the time period preceding to the first time period, and (3) a part of the broadcasting bandwidth to  
20 the second specific program for a time period preceding to the second time period in the total  
time period, so that the part of the broadcasting bandwidth allotted to the second specific  
program for the time period preceding to the second time period is narrower than the  
broadcasting bandwidth allotted to the data broadcasting program for the time period preceding  
to the second time period, the time period preceding to the second time period being longer than  
25 a time period that is necessary for transmitting a program data of the second specific program  
~~more than~~ at least once during the part of the broadcasting bandwidth allotted to the second  
specific program for the time period preceding to the second time period;

a script instruction generation step for (i) generating, with a script instruction  
generation unit, (a) when receiving a first event message for instructing storage, a script for  
30 ~~storing~~ of instruction for the receiving apparatus to store program data of the first specific  
program in a storage unit of ~~[[a]]~~ the receiving apparatus and (b) when receiving a second event  
message for instructing storage, a script ~~for storing~~ of instruction for the receiving apparatus to  
store program data of the second specific program in the storage unit, and (ii) generating (a)

when receiving a first event message for instructing reproduction, a script instructing the  
35 receiving apparatus to reproduce the program data of the first specific program in a case that the  
program data of the specific program has been stored in the storage unit and (b) when receiving a  
second event message for instructing reproduction, a script instructing the receiving apparatus to  
reproduce the program data of the second specific program in a case that the program data of the  
second specific program has been stored in the storage unit, each script being automatically  
40 stored when the receiving apparatus receives the scripts;

an event message generation step for generating, with an event message  
generator, a plurality of first event messages for instructing storage, a plurality of second event  
messages for instructing storage, a first event message for instructing reproduction and a second  
event message for instructing reproduction; and

45 a transmission step for transmitting, with a transmission unit, a normal program  
that includes a video stream and an audio stream and further in accordance with the allotment  
step

repeatedly transmitting (i) the first event messages for instructing storage before  
the first time period (ii) the second event messages for instructing storage before the second time  
50 period (iii) the first event message for instructing reproduction at the starting time of the first  
time period, and (iv) the second event message for instructing reproduction at the starting time of  
the second time period, during the total time period, and

(b) in accordance with the result of allotment by the allotment unit,

(i) repeatedly multiplexing the program data of the data broadcasting  
55 program during all of time periods other than the first and the second time periods in the total  
time period,



(ii) repeatedly multiplexing the program data of the first specific program during the first time period and the time period preceding to the first time period, and

(iii) repeatedly multiplexing the program data of the second specific program during the second time period and the time period preceding to the second time period;  
60 and

wherein, in accordance with the result of allotment by the allotment unit, repeatedly multiplex program data of the first and second specific program with the normal program based on a data carousel transmission method and transmit a first multiplexed result  
65 while multiplexing the program data of the first and second specific programs and the script with the normal program and transmitting a second multiplexed result in the preceding time period, and repeatedly multiplex the program data of the specific first and second programs and the script with the normal program and transmit the second multiplexed result in the reproduction time period,

70 the first and the second specific programs have the program data that relates to first and second commercial messages, respectively, which are inserted in the normal program, and

the reproduction time period of the specific program is the same as a broadcast time period of the commercial message.

18. (Currently Amended) A program recording medium storing instructions of a data broadcast program which [[is]] are readable [[for]] by a computer, in a broadcasting apparatus, to perform operations to enable the broadcasting apparatus ~~broadcasts~~ to broadcast a specific program to which a reproduction time period between a starting time and finishing time is  
5 specified, the reproduction being performed by a receiving apparatus, to display the specific

program in the reproduction time period, a computer the data broadcast program embodied on  
the program recording medium has the computer conduct the steps of:

an allotment step for allotting a broadcasting bandwidth for the reproduction time  
period to the specific program and allotting a part of the broadcasting bandwidth for a preceding  
10 time period immediately before the reproduction time period to the specific program and the  
other part of the broadcasting bandwidth to ~~other~~ another program, so that the part of the  
broadcasting bandwidth ~~for the preceding time period allotted to the specific program~~ is  
narrower than the other part of the broadcasting bandwidth ~~allotted to another program~~, the  
preceding time period being longer than a time period that is necessary for transmitting a  
15 program data of the specific program ~~more than~~ at least once during the part of the broadcasting  
bandwidth for the preceding time period allotted to the specific program;

a script generation step for generating (a) when the receiving apparatus receives  
an event message for instructing storage, a script ~~for storing~~ of instruction for the receiving  
apparatus to store program data of the specific program in a storage unit of the receiving  
20 apparatus, and (b) when the receiving apparatus receives an event message for instructing  
reproduction, a script of instruction for the receiving apparatus to ~~reproduce~~ perform the  
reproduction to display the program data of the specific program in a case where the program  
data of the specific program has been stored in the storage unit, each script being automatically  
stored when the receiving apparatus receives the ~~scripts~~ script;

25 [[a]] an event message generation step for generating a plurality of event ~~message~~  
messages for instructing storage and an event message for instructing reproduction; and

in accordance with the result of allotment by [[the]] an allotment unit, repeatedly  
multiplex program data of the first and second specific ~~program~~ programs with [[the]] a normal  
program based on a data carousel transmission method and transmit a first multiplexed ~~result~~

30 data while multiplexing the program data of the first and second specific programs and [[the]] a  
script of instruction for the receiving apparatus to store data with the normal program and  
transmitting a second multiplexed ~~result~~ data in the preceding time period, and repeatedly  
multiplex the program data of the specific first and second programs and the script of instruction  
with the normal program and transmit the second multiplexed ~~result~~ data in the reproduction time  
35 period,

a control step for controlling [[the]] a transmission unit to transmit the event  
messages for instructing storage in the preceding time period and to transmit the event message  
for instructing reproduction at the starting time,

wherein, the specific program has the program data that relates to a commercial  
40 message which is inserted in the normal program, and

the reproduction time period of the specific program is the same as a broadcast  
time period of the commercial message.

19. (Currently Amended) A program recording medium storing instructions on a data  
broadcast program which [[is]] are readable [[for]] by a computer, in a broadcasting apparatus, to  
perform operations to enable the broadcasting apparatus ~~transmits to~~ transmit a data broadcasting  
program and a first and a second specific programs which are inserted in the data broadcasting  
5 program, a total time period between a starting time and a finishing time for broadcasting the  
data broadcasting program including a first time period during which the first specific program is  
broadcast and a second time period during which the second specific program is broadcast, a  
computer reproduction being performed by a receiving apparatus to display the specific program  
in the respective time periods, the data broadcast program embodied on the program recording  
10 medium has the computer conduct the steps of:

an allotment step for

(a) allotting, with an allocating unit, a part of the broadcasting bandwidth to the first and the second specific programs and the other part of the broadcasting bandwidth to the data broadcasting program for all of time periods other than the first and the second time periods  
15 in the total time period, so that the part of the broadcasting bandwidth allotted to the first and the second specific programs for all time periods other than the first and the second time periods is narrower than the other part of the broadcasting bandwidth allotted to the data broadcasting program for all time periods other than the first and the second time periods, all of the time periods other than the first and the second time periods being longer than the time period  
20 necessary for transmitting a program data of the first specific program and a program data of the second specific program ~~more than~~ at least once during the part of the broadcasting bandwidth allotted to the first and the second specific programs for all time periods other than the first and the second time periods, and

(b) allotting a part of the broadcasting bandwidth to the first specific program  
25 and the other part of the broadcasting bandwidth to the second specific program for the first and second time periods;

a script instruction generation step for (i) generating, with a script generator, (a) when a receiving apparatus receives a first event message for instructing storage, a script for storing of instruction for the receiving apparatus to store program data of the first specific  
30 program in a storage unit of the receiving apparatus and (b) when receiving a second event message for instructing storage, a script ~~for storing of instruction for the receiving apparatus to~~ store program data of the second specific program in the storage unit, and (ii) generating (a) when receiving a first event message for instructing reproduction, a script instructing the receiving apparatus to reproduce the program data of the first specific program in a case that the

35 program data of the first specific program has been stored in the storage unit and (b) when  
receiving a second event message for instructing reproduction, script instructing the receiving  
apparatus to reproduce the program of the second specific program in a case that the program  
data of the second specific program has been stored in the storage unit, each script being  
automatically stored when the receiving apparatus receives the scripts;

40 an event message generation step for generating, with an event message  
generator, a plurality of first event messages for instructing storage, a plurality of second event  
messages for instructing storage, a first event message for instructing reproduction and a second  
event message for instructing reproduction; and

a transmission step for transmitting, with a transmission unit, a normal program  
45 that includes a video stream and an audio stream, and

repeatedly transmitting the scripts during the total time period, transmitting (i) the  
first event messages for instructing storage before the first time period, the first event message  
for instructing reproduction at the starting time of the first time period (iii) the second event  
messages for instructing storage before the second time period, and (iv) the second event  
50 message for instructing reproduction at the starting time of the second time period,

(b) in accordance with the result of allotment by the allotment step,

(i) repeatedly multiplex the program data of the data broadcasting  
program with the normal program based on a data carousel transmission method during all of  
time periods other than the first and the second time periods in the total time period, and

55 (ii) repeatedly multiplex the program data of each of the first and the  
second specific program during the total time period;

wherein, the first and the second specific programs have the program data that relates to first and second commercial messages, respectively, which are inserted in the normal program, and

60                   the reproduction time period of the specific program is the same as a broadcast time period of the commercial message.

20.     (Currently Amended) A program recording medium which is readable [[for]] by a computer in a broadcasting apparatus, the broadcasting apparatus transmits a data broadcasting program and a first and a second specific programs which are inserted in the data broadcasting program, reproduction being performed by a receiving apparatus to display the specific program  
5   in the respective time period, a computer program ~~embodied~~ stored, with machine readable instructions, on the program recording medium has the computer conduct the steps of:

an allotment step for

(a)     allotting, with an allocating unit, a broadcasting bandwidth for a first time period and a second time period to the first specific program and the second specific program,  
10   the first time period and the second time period are included in a total time period between a starting time and a finishing time for broadcasting the data broadcasting program, and (b)  
allotting (1) a broadcasting bandwidth to the data broadcasting data program in the total time period except for the first time period and the second-time period (2) a part of the broadcasting bandwidth to the first specific program for a time period preceding to the first time period in the  
15   total time period, so that the part of the broadcasting bandwidth allotted to the first specific program for the time period preceding to the first time period is narrower than the broadcasting bandwidth allotted to the data broadcasting program for the time period preceding to the first time period, the time period preceding to the first time period being longer than a time period

that is necessary for transmitting a program data of the first specific program more than once  
20 during the part of the broadcasting bandwidth allotted to the first specific program for the time  
period preceding to the first time period, and (3) a part of the broadcasting bandwidth to the  
second specific program for a time period preceding to the second time period in the total time  
period, so that the part of the broadcasting bandwidth allotted to the second specific program for  
the time period preceding to the second time period is narrower than the broadcasting bandwidth  
25 allotted to the data broadcasting program for the time period preceding to the second time period,  
the time period preceding to the second time period being longer than a time period that is  
necessary for transmitting a program data of the second specific program more than once during  
the part of the broadcasting bandwidth allotted to the second specific program for the time period  
preceding to the second time period;

30 a script instruction generation step for (i) generating, with a script instruction  
generation unit, (a) when a receiving apparatus receives a first event message for instructing  
storage, a script ~~for storing~~ of instruction for the receiving apparatus to store program data of the  
first specific program in a storage unit of the receiving apparatus and (b) when receiving a  
second event message for instructing storage, a script ~~for storing~~ of instruction for the receiving  
35 apparatus to store program data of the second specific program in the storage unit and (ii)  
generating (a) when receiving a first event message for instructing reproduction, a script  
instructing the receiving apparatus to reproduce the program data of the first specific program in  
a case that the program data of the specific program has been stored in the storage unit and (b)  
when receiving a second event message for instructing reproduction, a script instructing the  
40 receiving apparatus to reproduce the program data of the second specific program in a case that  
the program data of the second specific program has been stored in the storage unit, each script  
being automatically stored when the receiving apparatus receives the scripts;

an event message generation step for generating, with an event message generator, a plurality of first event messages for instructing storage, a plurality of second event messages for instructing storage, a first event message for instructing reproduction and a second event message for instructing reproduction; and

a transmission step for transmitting, with a transmission unit, a normal program that includes a video stream and an audio stream, and

repeatedly transmitting (i) the first storage instructions before the first time period (ii) the second storage instructions before the second time period (iii) the first reproduction instruction at the starting time of the first time period, and (iv) the second reproduction instruction at the starting time of the second time period, and

(b) in accordance with the result of allotment by the allotment step

(i) repeatedly multiplex the program data of the data broadcasting program during all of time periods other than the first and the second time periods in the total time period, and

(ii) repeatedly multiplex the program data of each of the first specific program during the first time period and the time period preceding to the first ~~time~~ time period; and

(iii) repeatedly multiplex the program data of the second specific program during the second time period and the time period preceding to the second time period;

wherein, in accordance with the result of allotment by the allotment step, repeatedly multiplex program data of the first and second specific program with the normal program based on a data carousel transmission method and transmit a first multiplexed result while multiplexing the program data of the first and second specific programs and the script with the normal program and transmitting a second multiplexed result in the preceding time period,



and repeatedly multiplex the program data of the specific first and second programs and the script with the normal program and transmit the second multiplexed result in the reproduction time period,

70           the first and the second specific programs have the program data that relates to first and second commercial messages, respectively, which are inserted in the normal program, and

          the reproduction time period of the specific program is the same as a broadcast time period of the commercial message.

21.   (Currently Amended) A recording medium storing a program with instructions that ~~[[is]]~~ are readable ~~[[for]]~~ by a computer in a broadcasting apparatus, the broadcasting apparatus broadcasts a specific program to which a reproduction time period between a starting time and finishing time is specified, the reproduction being performed by a receiving apparatus  
5   to display the specific program in the reproduction time period, the program has the computer conduct the steps of:

          an allotment step for allotting, with an allotment unit, a broadcasting bandwidth for the reproduction time period to the specific program and allotting a part of the broadcasting bandwidth for a preceding time period immediately before the reproduction time period to the  
10   specific program and the other part of the broadcasting bandwidth to another program, so that the part of the broadcasting bandwidth ~~for the preceding time period allotted to the specific program~~ is narrower than the other part of the broadcasting bandwidth ~~allotted to another program~~, the preceding time period being longer than a time period that is necessary for transmitting a program data of the specific program ~~more than~~ at least once during the part of the broadcasting  
15   bandwidth for the preceding time period allotted to the specific program;

a script generation step for generating, with a script generation unit, (a) when receiving apparatus receives an event message for instructing storage, a script ~~for storing of~~ instruction for the receiving apparatus to store program data of the specific program in a storage unit of the receiving apparatus, and (b) when the receiving apparatus receives an event message  
20 for instructing reproduction, a script for the receiving apparatus to ~~reproduce~~ perform the reproduction to display the program data of the specific program in a case where the program data of the specific program has been stored in the storage unit, each script being automatically stored when the receiving apparatus receives the scripts;

an event message generation step for generating, with an event generation unit, a  
25 plurality of event messages for instructing storage and an event message for instructing reproduction;

a transmission step for transmitting, with a transmission unit, a normal program that includes a video stream and an audio stream, and further in accordance with the result of allotment in the allotment step, (a) repeatedly multiplex program data of the other program with  
30 the normal program based on a data carousel transmission method and transmit a first multiplexed data prior to result while multiplexing the program data of the specific program and  
~~the script with the normal program and transmitting a second multiplexed result in the preceding~~  
time period, and repeatedly multiplex the program data of the specific program and the script with the normal program, the program data of the other program and the script with the normal  
35 program based on the data carousel transmission method and transmit resultant second multiplexed data in the preceding time period; and (c) repeatedly multiplex the program data of the specific program and the script with the normal program based on the data carousel transmission method and transmit resultant third multiplexed data in the reproduction processing

time period and transmit the resultant second multiplexed ~~result~~ data in the ~~reproduction~~  
40 preceding time period; and

a control step ~~operable~~ for controlling, with a control unit, ~~[[a]]~~ the transmission  
unit to transmit the event messages for instructing storage in the preceding time period and to  
transmit the event message for instructing reproduction at the starting time,

wherein the specific program has the program data that relates to a commercial  
45 message which is inserted in the normal program, and

the reproduction time period of the specific program is the same as a broadcast  
time period of the commercial message.

22. (Currently Amended) A recording medium storing program with instructions that  
[[is]] are readable ~~[[or]]~~ by a computer in a broadcasting apparatus, the broadcasting apparatus  
transmits a data broadcasting program, and a first and a second specific programs which are  
inserted in the data broadcasting program, a total time period between a starting time and a  
5 finishing time for broadcasting the data broadcasting program including a first time period  
during which the first specific program is broadcast and a second time period during which the  
second specific program is broadcast, reproduction being performed by a receiving apparatus to  
display the specific program in the respective time periods, the program has the computer  
conduct the steps of:

10 an allotment step for

(a) allotting, with an allocating unit, a part of the broadcasting bandwidth to  
the first and the second specific programs and the other part of the broadcasting bandwidth to the  
data broadcasting program for all of time periods other than the first and the second time periods  
in the total time period, so that the part of the broadcasting bandwidth allotted to the first and the

15 second specific programs for all time periods other than the first and the second time periods is narrower than the other part of the broadcasting bandwidth allotted to the data broadcasting program for all time periods other than the first and the second time periods, all of the time periods other than the first and the second time periods being longer than the time period necessary for transmitting a program data of the first specific program and a program data of the  
20 second specific program ~~more than~~ at least once during the part of the broadcasting bandwidth allotted to the first and the second specific programs for all time periods other than the first and the second time periods, and

(b) allotting a part of the broadcasting bandwidth to the first specific program and the other part of the broadcasting bandwidth to the second specific program for the first and  
25 the second time periods;

a script instruction generation step for (i) generating, with a script generator, (a) when a receiving apparatus receives a first event message for instructing storage, a script ~~for storing of instruction for the receiving apparatus to store~~ program data of the first specific program in a storage unit of the receiving apparatus and (b) when receiving a second event  
30 message for instructing storage, a script ~~for storing of instruction for the receiving apparatus to store~~ program data of the second specific program in the storage unit, and (ii) generating (a) when receiving a first event message for instructing reproduction, a script for the receiving apparatus to reproduce the program data of the first specific program in a case that the program data of the specific program has been stored in the storage unit and (b) when receiving a second  
35 event message for instructing reproduction, a script for the receiving apparatus to reproduce the program data of the second specific program in a case that the program data of the second specific program has been stored in the storage unit, each script being automatically stored when the receiving apparatus receives the scripts;

an event message generation step for generating, with an event message  
40 generator, a plurality of first event messages for instructing storage, a plurality of second event  
messages for instructing storage, a first event message for instructing reproduction and a second  
event message for instructing reproduction; and

a transmission step for transmitting, with a transmission unit, a normal program  
that includes a video stream and an audio stream, and

45 (a) repeatedly transmitting the scripts during the total time period,  
transmitting the first event messages for instructing storage before the first time period (ii) the  
first event message for instructing reproduction at the starting time of the first time period (iii)  
the second event messages for instructing storage before the second time period, and (iv) the  
second event message for instructing reproduction at the starting time of the second time period,

50 and

(b) in accordance with the result of allotment by the allotment step,

(i) repeatedly multiplex the program data of the data broadcasting  
program during all of time periods other than the first and second time periods in the total time  
period, and with the normal program based on a data carousel transmission

55 (ii) repeatedly multiplex the program data of each of the first and the  
second specific programs during the total time period with the normal program;

wherein, the first and the second specific programs have the program data that  
relates to first and second commercial messages, respectively, which are inserted in the normal  
program, and

60 the reproduction time period of the specific program is the same as a broadcast  
time period of the commercial message.

23. (Currently Amended) A recording medium storing a program with instructions that ~~[[is]]~~ are readable ~~[[for]]~~ by a computer in a broadcasting apparatus, the broadcasting apparatus transmits a data broadcasting program and a first and a second specific programs which are inserted in the data broadcasting program, reproduction being performed by a  
5 receiving apparatus to display the specific program in the respective time period, the program has the computer conduct the steps of:

an allotment step for (a) allotting, with an allocating unit, a broadcasting  
bandwidth for a first time period and a second time period to the first specific program and the second specific program, the first time period and the second time period are included in a total  
10 time period between a starting time and a finishing time for broadcasting the data broadcasting program, and (b) allotting (1) a broadcasting bandwidth to the data broadcasting data program in the total time period except for the first time period and the second time period (2) a part of the broadcasting bandwidth to the first specific program for a time period preceding to the first time period in the total time period, so that the part of the broadcasting bandwidth allotted to the first  
15 specific program for the time period preceding to the first time period is narrower than the broadcasting bandwidth allotted to the data broadcasting program for the time period preceding to the first time period, the time period preceding to the first time period being longer than a time period that is necessary for transmitting a program data of the first specific program ~~more than at~~  
least once during the part of the broadcasting bandwidth allotted to the first specific program for  
20 the time period preceding to the first time period, and (3) a part of the broadcasting bandwidth to the second specific program for a time period preceding to the second time period in the total time period, so that the part of the broadcasting bandwidth allotted to the second specific program for the time period preceding to the second time period is narrower than the

broadcasting bandwidth allotted to the data broadcasting program for the time period preceding  
25 to the second time period, the time period preceding to the second time period being longer than  
a time period that is necessary for transmitting a program data of the second specific program  
~~more than~~ at least once during the part of the broadcasting bandwidth allotted to the second  
specific program for the time period preceding to the second time period;

a script instruction generation step for (i) generating, with a script instruction  
30 generation unit, (a) when receiving a first event message for instructing storage, a script for  
~~storing~~ of instruction for the receiving apparatus to store program data of the first specific  
program in a storage unit of [[a]] the receiving apparatus and (b) when receiving a second event  
message for instructing storage, a script ~~for storing~~ of instruction for the receiving apparatus to  
store program data of the second specific program in the storage unit, and (ii) generating (a)  
35 when receiving a first event message for instructing reproduction, a script instructing the  
receiving apparatus to reproduce the program data of the first specific program in a case that the  
program data of the specific program has been stored in the storage unit and (b) when receiving a  
second event message for instructing reproduction, a script instructing the receiving apparatus to  
reproduce the program data of the second specific program in a case that the program data of the  
40 second specific program has been stored in the storage unit, each script being automatically  
stored when the receiving apparatus receives the scripts;

[[a]] an event message generation step for generating, with an event message  
generator, a plurality of first storage instructions, a plurality of second storage instructions, a first  
reproduction instruction and a second reproduction instruction; and

45 a transmission step for transmitting, with a transmission unit, a normal program  
that includes a video stream and an audio stream and further in accordance with the allotment  
step

repeatedly transmitting (i) the first event messages for instructing storage before the first time period (ii) the second event messages for instructing storage before the second time period (iii) the first event message for instructing reproduction at the starting time of the first time period, and (iv) the second event message for instructing reproduction at the starting time of the second time period, during the total time period, and

(b) in accordance with the result of allotment by the allotment unit,

(i) repeatedly multiplexing the program data of the data broadcasting program during all of time periods other than the first and the second time periods in the total time period,

(ii) repeatedly multiplexing the program data of the first specific program during the first time period and the time period preceding to the first time period, and

(iii) repeatedly multiplexing the program data of the second specific program during the second time period and the time period preceding to the second time period; and

wherein, in accordance with the result of allotment by the allotment unit, repeatedly multiplex program data of the first and second specific program with the normal program based on a data carousel transmission method and transmit a first multiplexed result while multiplexing the program data of the first and second specific programs and the script with the normal program and transmitting a second multiplexed result in the preceding time period, and repeatedly multiplex the program data of the specific first and second programs and the script with the normal program and transmit the second multiplexed result in the reproduction time period,



70           the first and the second specific programs have the program data that relates to  
first and second commercial messages, respectively, which are inserted in the normal program,  
and

          the reproduction time period of the specific program is the same as a broadcast  
time period of the commercial message.

24.   (Currently Amended) A broadcasting method for reducing television receiver  
latencies in displaying an interactive content portion of broadcast television commercials, the  
method comprising the steps of:

          assigning a television program to a first time slot and a commercial to a second  
5   time slot immediately after the first time slot;

          allocating a first portion of the available bandwidth of the first time slot to  
audiovisual content of the television program;

          allocating a second portion of the available bandwidth of the first time slot to a  
specific program having interactive content for a commercial, so that the second portion of the  
10   available bandwidth of the first time slot is narrower than the first portion of the available  
bandwidth of the first time slot, the first time slot being longer than a time period necessary for  
transmitting a program data of the specific program having interactive content for the  
commercial ~~more than~~ at least once during the second portion of the available bandwidth of the  
first time slot;

15           allocating a first portion of the available bandwidth of the second time slot to the  
specific program;

          allocating a second portion of the available bandwidth of the second time slot to  
audiovisual content of the commercial;

transmitting the audiovisual content of the television program during the first time  
20 slot;  
  
repeatedly transmitting in a carousel format the specific program during the first  
time slot;  
  
transmitting the audiovisual content of the commercial during the second time  
slot;  
25 repeatedly transmitting in a carousel format the specific program during the  
second time slot,  
  
transmitting a script for storing the specific program,  
transmitting a script for executing the specific program, and  
receiving and storing the specific program at the television receiver.

25.-28. (Cancelled)

29. (Currently Amended) A broadcasting apparatus that broadcasts a specific  
program to which a reproduction time period between a starting time and a finishing time is  
specified, the reproduction being performed by a receiving apparatus to display the specific  
program in the reproduction time period, the broadcasting apparatus comprising:  
5 allotment unit operable to allot a broadcasting bandwidth for the reproduction  
time period to the specific program and allotting a part of the broadcasting bandwidth for a  
preceding time period immediately before the reproduction time period to the specific program  
and the other part of the broadcasting bandwidth to another program;  
  
script generation unit operable to generate (a) when the receiving apparatus  
10 receives an event message for instructing storage, a script of instruction for the receiving  
apparatus to store ~~for storing~~ program data of the specific program in a storage unit of the

receiving apparatus, and (b) when the receiving apparatus receives an event message for  
instructing reproduction, a script of instruction for the receiving apparatus to reproduce to  
display the program data of the specific program in a case where the program data of the specific  
15 program has been stored in the storage unit, each script being automatically stored when the  
receiving apparatus receives the script;

event message generation unit operable to generate the event message for  
instructing storage and the event message for instructing reproduction;

transmission unit operable to transmit a normal program that includes a video  
20 stream and an audio stream, and further in accordance with the result of allotment by the  
allotment unit, repeatedly multiplex program data of the other program with the normal program  
based on a data carousel transmission method and transmit a first multiplexed result while  
multiplexing the program data of the specific program and the script with the normal program  
and transmitting a second multiplexed result in the preceding time period, and repeatedly  
25 multiplex the program data of the specific program and the script with the normal program and  
transmit the second multiplexed result in the reproduction time period, and repeatedly transmit,  
as an event message ~~independent of the specific program~~, each script generated by the script  
generation unit in a cycle different from a cycle of the specific program; and

control unit operable to control the transmission unit to transmit the event  
30 message for instructing storage generated by the event message generation unit in the preceding  
time period and to transmit the event message for instructing reproduction generated by the event  
message generation unit at the starting time,

wherein the specific program has the program data that relates to a commercial  
message which is inserted in the normal program, and

35                   the reproduction time period of the specific program is the same as a broadcast  
time period of the commercial message.